EDUCATIONAL PHILOSOPHY OF MAHATMA GANDHI WITH SPECIAL REFERENCE TO CURRICULUM OF BASIC EDUCATION

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ABSTRACT

Background: Non communicable diseases are increasing day by day. Chronic Kidney Disease (CKD) is one of the major causes of death in India. Hypertension and Diabetes Mellitus are the common causes of CKD.

Objective: The objective of this narrative review was to find the status of CKD in India

Method: A through literature search was conducted using various titles and reports on peer reviewed medical indexed journals. The search was carried out using data bases MEDLINE and CINAHL. The review included nine relevant survey studies out of 432 hits.

Results: Out of nine reviewed studies, two studies showed significant correlation between CKD and age, Diabetes Mellitus, hypertension, serum creatinine. One study showed 23.5% of hypertensive subjects were having CKD stage III. Study done in Bhopal showed average crude and age adjusted incidence rates were 151 and 232 per million populations respectively. The study done in Delhi showed the prevalence of CKD is 0.785% or 7852/million adult population

Conclusion: The prevalence of CKD is increasing in India and studies done in India shows diabetes and hypertensions are the commonest causes of CKD.

Identification of CKD in early stages is important to delay the progression of the disease which intern decreases the economic burden on individual, family and community. More such studies are required to sensitize the people about the functioning of kidney.

KEYWORDS: Chronic Kidney Disease, Hypertension, Diabetes Mellitus, estimated Glomerular Filtration Rate.

Introduction

Chronic kidney disease (CKD) is becoming an important health problem and it increases health care expenditure, morbidity and mortality. Hypertension and Diabetes Mellitus are the common causes of CKD. Glomerular Filtration Rate (eGFR) will tell about the kidney function. There are five stages in CKD based on eGFR. The fifth stage of CKD is termed as End Stage Renal Disease (ESRD) and in this stage patient needs dialysis or kidney transplantation. Identification of CKD in early stages helps to delay the progression of the disease which intern decreases the economic burden on individual, family and community. Early identification of CKD can be easily done by calculating eGFR using CG (Cockcroft – Gualt), MDRD (Modification of Diet in Renal Disease) and CKD-EPI (Chronic Kidney Disease – Epidemiology) formula. Early identification also helps to prevent CKD complications by referring the patient to nephrologists.

Prevalence of CKD: The number of patients with Chronic Kidney Disease treated by dialysis and transplantation has augmented in the United States from 209000 in 1991 to 472 000 in 2004. Every year 1, 00,000 newly diagnosed patients of end stage renal disease

(ESRD) start dialysis in India (Modi & Jha, 2006). From India limited data are available about the prevalence of CKD.

Significance of this review: In India diabetes and hypertension account for 40-60% cases of CKD. (Rajapurkar, et al., 2012). Prevalence of diabetes in Indian adult population was 5.3% in Jharkhand and 13.6% in Chandigarh (Anjana, et al., 2011). The prevalence of diabetes mellitus in Kanchipuram and Thiruvallur district, Tamilnadu was 10.4% (Raman, Ganesan, Pal, Kulothungan, & Sharma, 2014). With increasing prevalence of these diseases in India, prevalence of CKD is expected to increase, and obviously this is the key target population to address. More CKD screening studies need to be undertaken in India to sensitize the people about CKD stages and educating the population about diabetes and hypertension management to prevent the complications.

Aim: To find the status of CKD in India.

Materials and methods

This is a narrative review in which studies related to CKD due to hypertension and Diabetes Mellitus were reviewed. A through literature search was conducted using various titles and reports on peer reviewed medical indexed journals. Literature search for research articles was performed, published in 2005-2015, English language. The search was carried out using data bases like MEDLINE and CINAHL. The key words used were: Chronic Kidney Disease, Hypertension, Diabetes Mellitus, and estimated Glomerular Filtration Rate.

The following inclusion criteria were established to select the studies:
1. Studies conducted in India
2. Participants aged 18 years and above
3. Survey studies
4. Studies on Chronic Kidney Disease

Results

Search in two databases with key words, MeSH and subject headings yielded 42 and 390 hits from MEDLINE and CINHAL respectively. The search result is shown in Figure 1

Figure 1. Prisma chart showing study selection for review
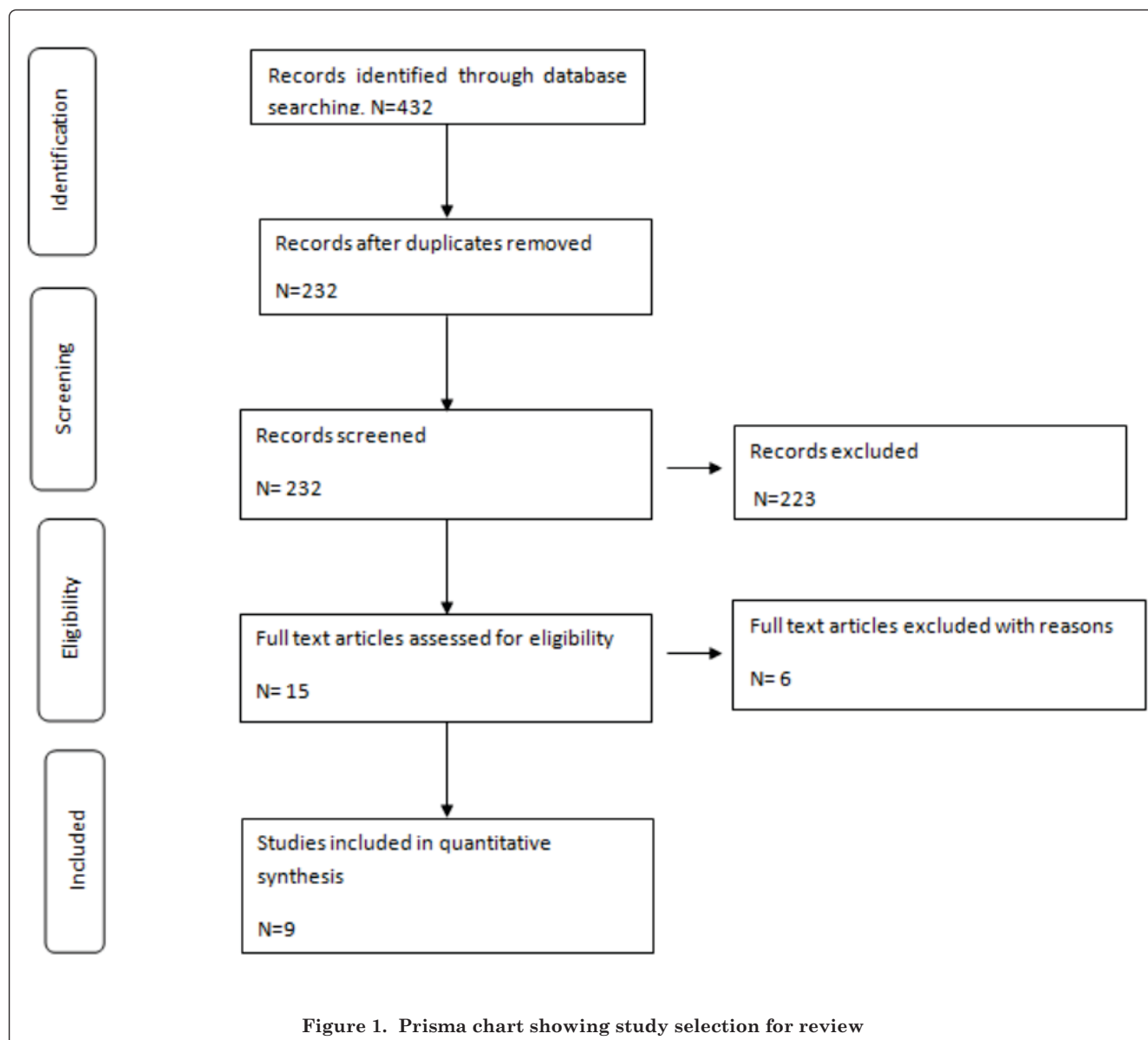
A total of 432 studies were retrieved in initial search. Total nine studies were found to be eligible and study details are described in table 1. All the studies retrieved on the prevalence of CKD in India assessed the variables such as height, weight, blood pressure, serum creatinine, urine protein and eGFR. Out of nine studies four studies assessed blood sugar and one study assessed fasting lipid profile along with other variables mentioned above.

The review included nine relevant survey studies out of 432 hits. Methodological characteristics are showed in table 1.

Table1. Methodological characteristics of reviewed articles

Author/ Year	Study design & materials	Aim and variable	Sample size	Population	Results
Anupama & Uma, 2015	Cross-sectional survey. Demographic variables and, proteinuria and serum creatinine.	CKD Prevalence among adults in a rural population and to identify the risk factor profile.	2091	People aged 18years and above from Shimoga, Karnataka	Proteinuria was present in 2.8% of subjects. CKD was present in 6.3% & 16.54% of subjects by using MDRD & CG formula respectively. A significant relationship was found between CKD and gender, increased age, abdominal obesity, smoking, Diabetes Mellitus and hypertension.
Kumar, Kumar, Punam, Kumar, & Nat, 2014	Cross-sectional survey. Height, weight, BP, serum creatinine, Urine protein.	Screening of general population on World Kidney Day for detecting patients with CKD.	547	Indians aged ≥18 years of age from Varanasi	CKD was found in 191 (34.91%) subjects. Significant relationship was found between CKD and age, Diabetes Mellitus, urine protein, serum creatinine. No significant relationship was found between serum creatinine level and urine protein (P = .001).
Farag & et.al, 2014	Survey. Height, weight, BP, serum creatinine, Urine protein	Epidemiological information on CKD. Estimated glomerular filtration rate (eGFR)	6120	Adults above 18 years of age from various regions of India	Hypertension was observed in 43.5% and half (54%) of the hypertensive subjects were aware of their hypertension status. Proteinuria≥1+ on dipstick and CKD (eGFR< 60 ml/min/1.73 m2) were observed in 19% and 23.5% of hypertensive subjects.
Gallieni M & et.al, 2013	Cross-sectional survey. Demographic and anthropometric data, urine protein and serum creatinine	To investigate hypertension and CKD.	2536	People aged 18years and above from West Bengal	Stage I & 2 hypertension were present in 39.4%. Proteinuria was present in 7.7% of the participants. Stage 3 CKD was found in 4.2%.
Rajapurkar, et al., 2012	Cross-sectional survey. Height, weight, serum creatinine, history of diabetes, hypertension.	To study various aspects of CKD	52273	People aged above 18 years from 4 regions of India- East, North, South, and west.	Commonest cause of CKD was Diabetes Mellitus (31%). Other causes were undetermined etiology (16%), chronic glomerulonephritis (14%) and hypertension (13%). About 48% of participants presented in End Stage renal Disease (ESRD); Patient with Diabetic nephropathy was older, and presented in earlier stages of CKD. Low income group patients presented with advanced CKD. Patients attending the Government hospitals were low income group, young, and the cause of CKD was unknown etiology.
Varma, Raman, Ramakrishnan, Singh, & Varma, 2010	Cross-sectional survey. Albuminuria, Serum creatinine, fasting blood sugar and lipid profile.	Identification of early stages of CKD.	3398	All healthy adults aged 18 years and above, central government employees from Agra	Mean eGFR was 98(± 25.25) and 100 (± 19.48) ml/min/1.73 m2 by the MDRD and CKD-EPI respectively. MDRD equation shown 189 (6.62%), 154 (5.40%) and 86 (3.02%) had CKD stage I, II, III respectively. The corresponding percentages by using CKD- EPI were 192 (6.73%), 122 (4.28%) and 60(2.11%), respectively.
Singh & et.al, 2009	Cross-sectional survey. Height, weight, BP, serum creatinine, Urine protein	To estimate and compare the occurrence of low GFR, proteinuria and associated risk factors.	6914	Adults aged ≥20 years from Delhi	Diabetes and hypertension were associated with low eGFR and proteinuria. Prevalence of stage 3 CKD was 12.8% and 3.8% by CG and MDRD equation respectively.
Modi & Jha, 2006	Survey. Demographic proforma, urine albumin, sugar and serum creatinine	To report the End Stage Renal Disease incidence in a large urban population.	572029	Subjects were Beneficiaries of free health care in Bhopal city.	Total 346 new stage 5 CKD patients were diagnosed and 86, 82, 85, and 93 new patients diagnosed in 2002, 2003, 2004 and 2005 respectively. Average crude incidence rate was 151 per million population.
Agarwal & et.al, 2005	Survey. Demographic proforma. Urine test for albumin, sugar and serum creatinine.	To determine the prevalence of CKD.	4712	People aged 18 years and above from Delhi	The prevalence of CKD was 0.785% or 7852/million adult population

Discussion:

Prevalence of CKD in Indian population was studied in all the nine reviewed studies. Two studies showed significant relationship between CKD and age, Diabetes Mellitus, urine protein and serum creatinine. One study depicts no significant relationship between serum creatinine level and urinary protein excretion and no significant difference between CKD and gender. Another study reported 346 new stage 5 CKD patients in three consecutive years. Average crude incidence rate was 151 per million populations. The poor control of Diabetes Mellitus and hypertension leads to CKD. So control of hypertension and diabetes plays a major role in reducing of prevalence of CKD. There was a difference in prevalence of CKD by using MDRD, CKD-EPI and CG formula. CG gives less eGFR value compared to MDRD and MDRD gives less eGFR value compared to CKD- EPI formula.

Conclusion:

The prevalence of CKD is increasing in India and available literature in that shows diabetes and hypertension is the commonest causes of CKD.

Identification of CKD in early stages is important to delay the progression of the disease which intern decreases the economic burden on individual, family and community. More such studies are required to sensitize the people about the functioning of kidney.

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